

WE CLAIM:

1. A liquid enzyme cleaning composition comprising a surfactant, a deter-
5 enzyme, about 10% to about 20% by weight of a boric acid salt, and 40% to about 85% by
weight water;
wherein the liquid enzyme cleaning composition is formulated to provide
detergent enzyme that retains 75% of its initial enzyme activity at ambient temperature for at
least about 25 days after forming the composition.
- 10 2. The composition of claim 1, wherein the boric acid salt comprises at least one
of an alkali metal boric acid salt, an alkanolammonium boric acid salt, an alkanolamine boric
acid salt, and a combination thereof.
3. The composition of claim 2, wherein the boric acid salt comprises at least one
of monoethanolammonium borate, monoethanolamine borate, diethanolammonium borate,
15 diethanolamine borate, triethanolammonium borate, triethanolamine borate, and a
combination thereof.
4. The composition of claim 1, wherein the composition is a solution.
5. The composition of claim 1, wherein the detergent enzyme comprises at least
one of protease, amylase, lipase, cellulase, peroxidase, gluconase, mannanase, and a
20 combination thereof.
6. The composition of claim 1, wherein the surfactant comprises at least one of
anionic surfactant, nonionic surfactant, and a combination thereof.
7. The composition of claim 6, wherein the surfactant comprises at least one of a
C₁₃-C₁₅ alcohol alkoxylate, a polyoxyethylene alkyl phosphate ester acid, and a combination
25 thereof.
8. The composition of claim 1, further comprising an ingredient comprising at
least one of a source of calcium ions, an optical brightener, a hydrotrope, a polyol, a builder,
a dye, and a combination thereof.
9. The composition of claim 1, further comprising a pH in the range of 9 to 11.
- 30 10. The composition of claim 1, wherein the composition is configured for use in
a clean-in-place cleaning program.

11. The composition of claim 1, wherein the composition is physically stable at room temperature for at least about 10 days after forming the composition.

12. The composition of claim 1, wherein the composition is physically stable at room temperature for at least about 14 days after forming the composition.

5 13. The composition of claim 1, wherein the composition is physically stable at room temperature for at least about 21 days after forming the composition.

14. The composition of claim 1, wherein the composition is a 1:10 dilution with water and the dilution is physically stable for one week.

15. A liquid enzyme cleaning composition comprising surfactant, detergent
10 enzyme, about 10% to about 20% by weight boric acid salt, and 40% to about 85% by weight water;

wherein the composition is physically stable at room temperature for at least about 10 days after forming the composition.

16. The composition of claim 15, wherein the boric acid salt comprises at least
15 one of an alkali metal boric acid salt, an alkanolammonium boric acid salt, an alkanolamine boric acid salt, and a combination thereof.

17. The composition of claim 16, wherein the boric acid salt comprises at least one of monoethanolammonium borate, monoethanolamine borate, diethanolammonium borate, diethanolamine borate, triethanolammonium borate, triethanolamine borate, and a
20 combination thereof.

18. The composition of claim 15, wherein the composition is a solution.

19. The composition of claim 15, wherein the detergent enzyme comprises at least one of protease, amylase, lipase, cellulase, peroxidase, gluconase, mannanase, and a combination thereof.

25 20. The composition of claim 15, wherein the surfactant comprises at least one of anionic surfactant, nonionic surfactant, and a combination thereof.

21. The composition of claim 20, wherein the surfactant comprises at least one of C₁₃-C₁₅ alcohol alkoxylate, a polyoxyethylene alkyl phosphate ester acid, and a combination thereof.

30 22. The composition of claim 15, further comprising an ingredient comprising at least one of a source of calcium ions, an optical brightener, a hydrotrope, a polyol, a builder,

a dye, and a combination thereof.

23. The composition of claim 15, further comprising a pH in the range of 9 to 11.

24. The composition of claim 15, wherein the composition is configured for use in a clean-in-place cleaning program.

5 25. The composition of claim 15, wherein the composition is physically stable at room temperature for at least about 14 days after forming the composition.

26. The composition of claim 15, wherein the composition is physically stable at room temperature for at least about 21 days after forming the composition.

10 27. The composition of claim 15, wherein the composition is a 1:10 dilution with water and the dilution is physically stable for one week.